ENGINE SYSTEMS, INC.
175 Freight Road
Rocky Mount, NC 27804
Telephone: 252/977-2720
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February 10, 2006

U.S. Nuclear Regulator Commission
Document Control Desk
Mail Stop 0P1-17
Washington, DC 20555

Subject: 10CFR21 Reporting of Defects and Non-Compliance -
Engine Systems, Inc. Report No. 10CFR21-0092, Rev. 0

Woodward 505 Controls (manufactured between December 2003 and June 2004), P/N: 9903-543

Dear Sir:

The enclosed report addresses a reportable notification about a small population of Woodward 505 digital controls.

A copy of the report has been mailed to our affected nuclear customer.

Please sign below, acknowledging receipt of this report, and return a copy to the attention of Document Control at the address above (or, fax to number 252/446-1134) within 10 working days after receipt.

Yours very truly,

ENGINE SYSTEMS, INC.

Susan Woolard

Susan Woolard
Document Control

Please let us know if ANY of your mailing information changes - name of recipient, name of company/facility, address, etc. Mark the changes on this acknowledgment form and send to us by mail or FAX to the number above.

RECEIVED: _____

(93)

DATE: _____

IE20

ENGINE SYSTEMS, INC.
175 Freight Road, Rocky Mount, NC 27804
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Report No. 10CFR21-0092
Rev. 0: 02/10/06

10CFR21 REPORTING OF DEFECTS AND NON-COMPLIANCE

COMPONENT: Woodward 505 Controls manufactured between Dec. 2003 & June 2004
P/N: 9903-543

SYSTEM: Turbine Governor Control

CONCLUSION: Reportable in accordance with 10CFR21.

Prepared By: _____ Date: 2/10/06
Engineering Manager

Reviewed By: _____ Date: 02/10/2006
Quality Assurance Manager

REV	DATE	PAGE	DESCRIPTION
0	02/10/06		Initial issue.

COMPONENT:

Woodward 505 Controls manufactured between Dec. 2003 & June 2004
P/N: 9903-543

DISCUSSION:

Engine Systems Inc. (ESI) has concluded an investigation of a condition reported by Woodward for their 505 controller. The 505 is a digital controller used to control speed of steam turbines. Only a small number of 505 controls are utilized in nuclear service; these are identified by the "9903-" part number prefix.

Woodward service bulletin 01365 (attached) reports that a low voltage issue with the internal power supply has been detected in a small population of 505 controls that have been returned for service. This issue has been attributed to a problem with the mechanical connection between the controller's internal fuse and the fuse clips that are installed in-line with the unit's CPU. The low voltage condition results in a continuous reboot of the control; this causes the control's output signal to go to zero volts. For most commercial applications, the 505 controls are configured such that zero volts results in turbine shutdown; thus, the potential failure mode would result in a safe shutdown of the control and the turbine (as reported in the Woodward bulletin).

For nuclear applications however, the 505 controls are configured for maximum speed at zero volts output. This is necessary to keep the governor valve open during standby so that steam can be admitted to the turbine by the trip and throttle valve to begin startup. Once turbine speed is detected by the 505, it will take control and close the governor valve as necessary to maintain the required speed setting. In this case, the potential failure mode would result in shutdown of the control which would cause the turbine speed to abruptly increase until the overspeed device trips and shuts down the turbine.

AFFECTED CUSTOMERS:

The following three (3) nuclear 505 controls are affected by this notification. Of these, only two (2) were shipped for nuclear service.

Part No.	Serial No.	Customer	Customer PO	ESI SO
9903-543	13804744	N/A, ESI test specimen	N/A	8000006
9903-543	13804745	Southern Nuclear – Vogtle	7059691	8000006
9903-543	13804975	Southern Nuclear – Vogtle	7059691	8000006

CORRECTIVE ACTION:

Suspect 505's should be returned to ESI as soon as possible to have the power supply module reworked. Contact ESI's Customer Service department with the part number and serial number of the control.

WOODWARD

SERVICE BULLETIN

505 & 505E Control Internal Power Supply Issue

February 2006 01365

Issue

An internal power supply issue has been detected in a small population of 505 and 505E controls. This internal power supply issue can cause the controller's CPU to reboot and stay in its reboot mode, resulting in a safe shutdown of both the control and turbine.

Description

Woodward has identified a small population of 505 and 505E controls (less than 2.5%) that have been returned for service due to a continuous reboot condition caused by a low internal 5-volt power supply. It has been determined that the main contributing factor of this issue is the mechanical connection between the controller's internal 5-volt fuse and the fuse clips in-line with the unit's CPU.

The potential failure modes of an affected unit results in a safe shutdown of both the controller and turbine, with the controller's front panel typically displaying "Testing RAM..." while continuously rebooting. This reboot condition may also occur during any phase of the control's initialization routine as well, so the actual text displayed may vary.

Affected Units

The following 505 and 505E control item numbers manufactured between December 1, 2003 and June 29, 2004, are susceptible to this internal power supply issue.

Item Number	Serial Number Range		Item Number	Serial Number Range
9903-543	13804744 to 13804975		9907-166	13646050 to 13903823
9907-118	Only 13647807		9907-167	13603298 to 13906519
9907-162	13647819 to 13900521		9907-805	13679854 to 13809952
9907-163	13652264 to 13906533		9907-813	13660897 to 13898920
9907-164	13632578 to 13918086		9907-814	13660901 to 14122459
9907-165	13631766 to 13915341		9907-815	13646106 to 13903072

Corrective Action

Woodward has implemented process improvements, and an engineering change to the controller's power supply module to prevent the issue from occurring.

Customer Action

If it is determined that a unit needs to be returned to Woodward, please select one of the following options:

- Contact your Woodward customer service representative for a return authorization number (RAN) and return the unit(s) to Woodward.
- If a return is not feasible, contact your Woodward customer service representative to discuss the availability of replacement/exchange unit(s).

Please refer to this service bulletin number when scheduling your return. Service bulletin actions will be performed at no charge within the product warranty period.